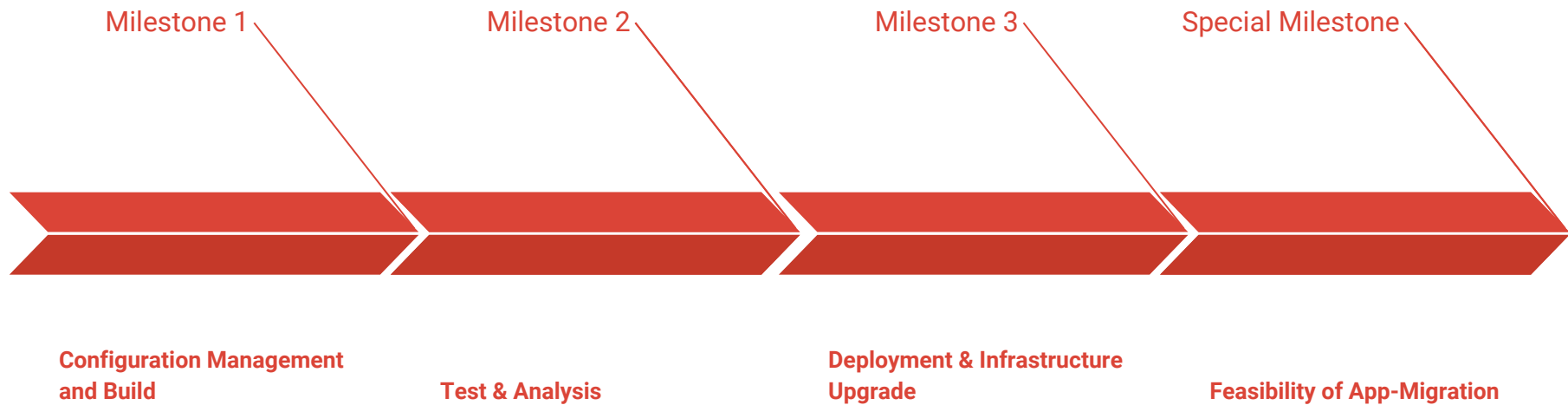


DevOps Pipeline

Presented By:

- Abhishek Bandarpule
- Calvin Fernando
- Davis Pynadath
- Revanth Pathuri

Goal

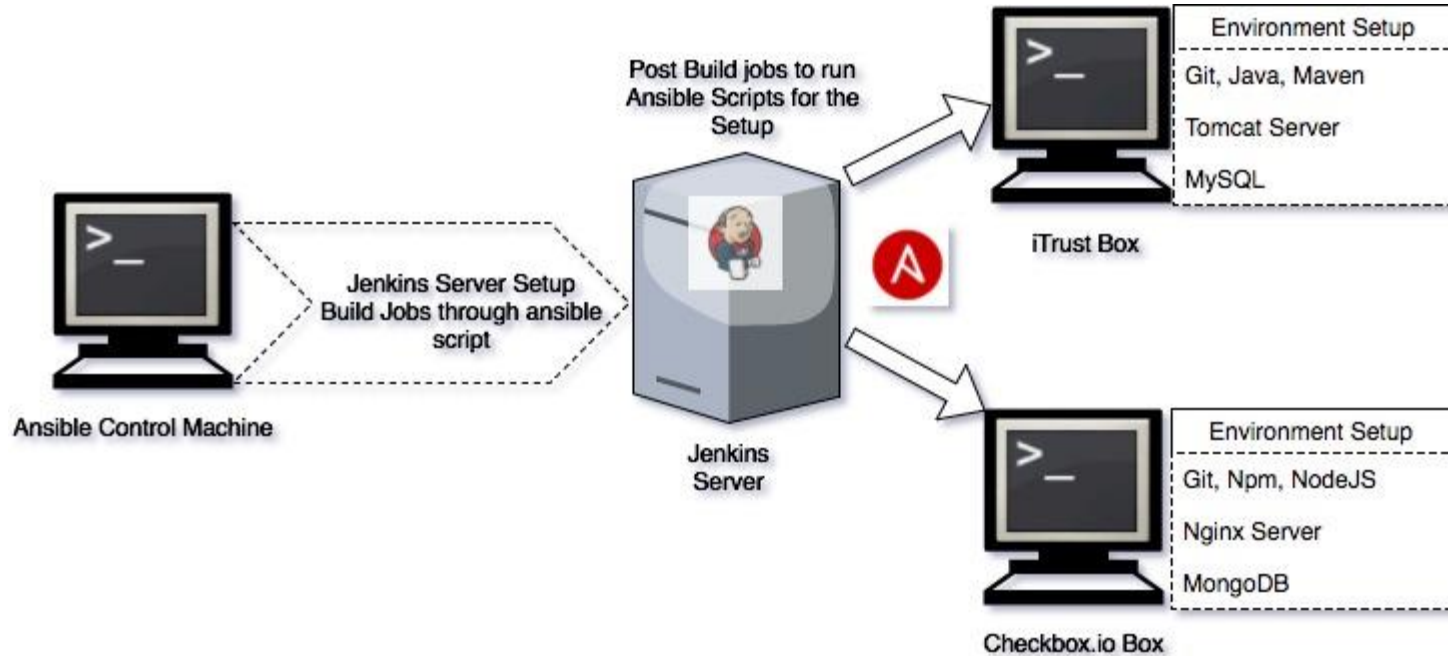


Milestone 1 - Build Stage

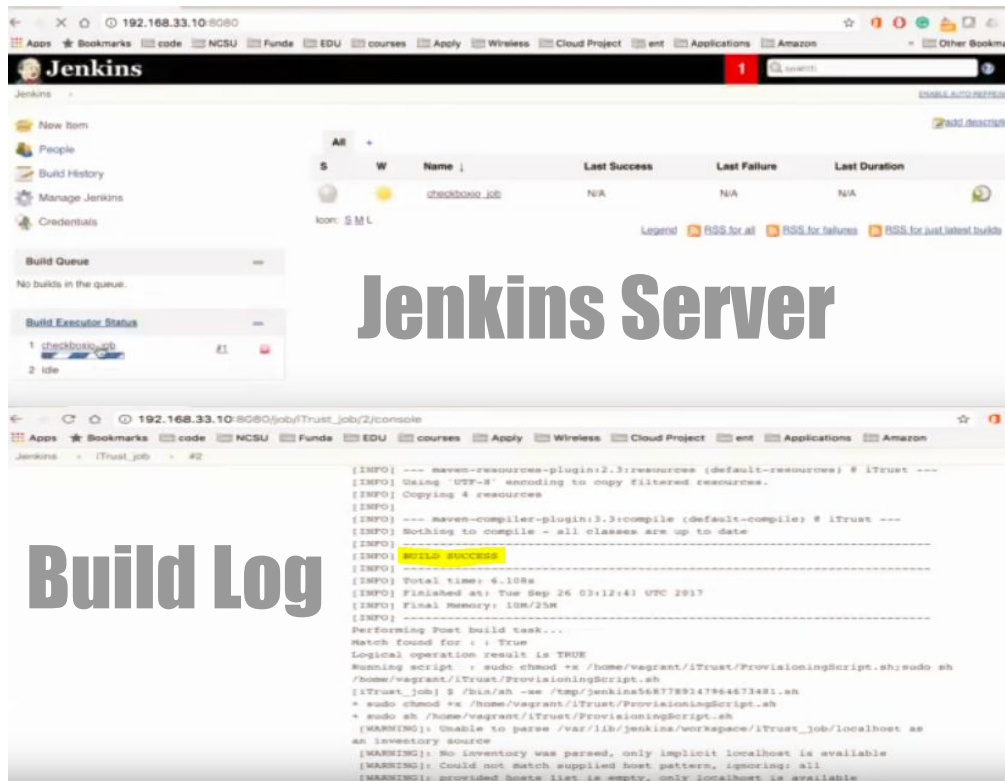
Configuration Management & Build

1. Jenkins Server Setup
2. Build Jobs
 - a. iTrust (Java Application)
 - b. Checkbox.io (Node Application)
3. Local Deploy

Milestone 1



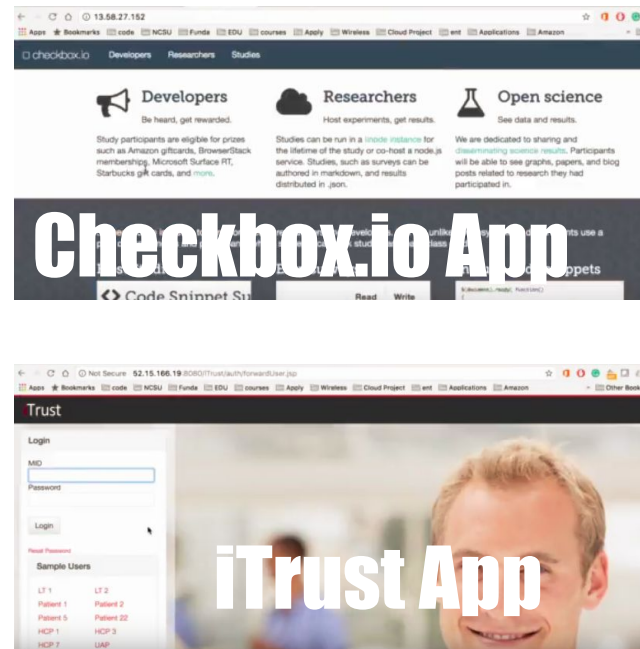
Milestone 1



The screenshot shows the Jenkins web interface. The top navigation bar includes links for Apps, Bookmarks, code, NCSU, Funda, EDU, courses, Apply, Wireless, Cloud Project, ent, Applications, and Amazon. The main content area displays the Jenkins dashboard with a sidebar on the left containing links for New Item, People, Build History, Manage Jenkins, and Credentials. The central panel shows a table of builds for the 'checkboxio_job' with columns for Name, Last Success, Last Failure, and Last Duration. Below the table, the 'Build Queue' section indicates 'No builds in the queue.' and the 'Build Executor Status' section shows two executors: 'checkboxio_job' and 'Idle'. The console log at the bottom displays the output of a Maven build, including the command 'mvn -Dmaven.compiler.version=3.3 compile' and the result 'BUILD SUCCESS'.

Jenkins Server

Build Log



The top part of the image shows the checkbox.io website. The header includes links for Developers, Researchers, and Open science. The main content area features three sections: 'Developers' (Be heard, get rewarded), 'Researchers' (Host experiments, get results), and 'Open science' (See data and results). Below these sections, there is a large white text overlay that reads 'Checkbox.io App'. The bottom part of the image shows the iTrust app interface. The app has a login screen with fields for 'MO' and 'Password', and a 'Login' button. Below the login fields, there is a 'Sample Users' section with a list of users: LT1, LT2, Patient 1, Patient 2, Patient 5, Patient 22, HCP 1, HCP 3, HCP 7, and UAP. The app is overlaid on a background image of a smiling man.

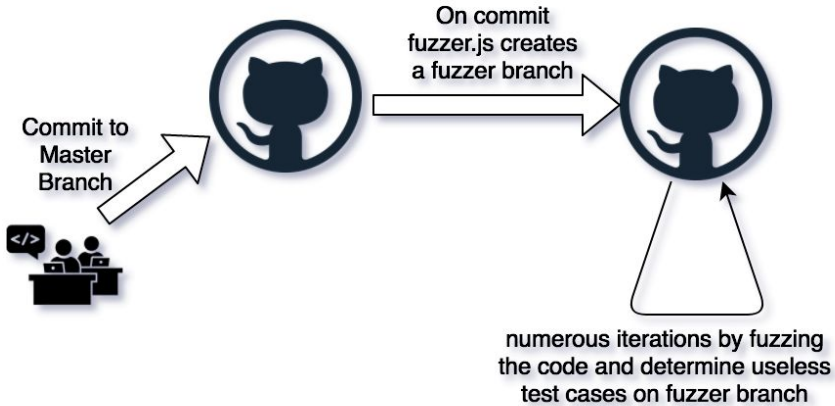
Checkbox.io App

iTrust App

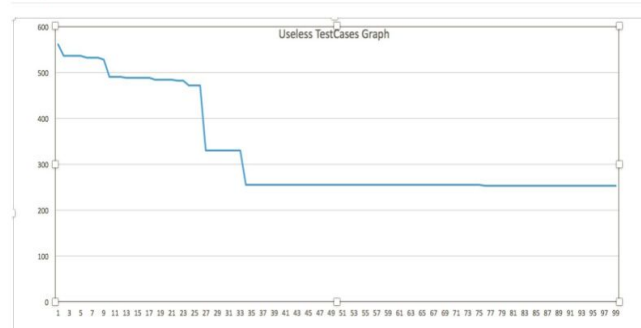
Milestone 2 - Test and Analysis

1. Fuzzing and Useless Test Case detector
2. Code Coverage Report
3. Code Analysis

Milestone 2 (Testing & Analysis)



Graph of Number of Useless TestCases vs Number of Builds



```
18.221.174.184:8080/job/checkboxio_job/1/console
Jenkins > checkboxio_job > #1

+ nodejs analysis.js
FILENAME: markdown.js
ImportCount 0 Strings 0

Function: loadJadeTemplates(): 32
bigOh: false messageChain: 1 syncCalls: 0 LineCount: 24

Code doesnot follow the guidelines linecount or syncalls messagechain or complexity

Function: testFile(): 59
bigOh: false messageChain: 1 syncCalls: 0 LineCount: 25

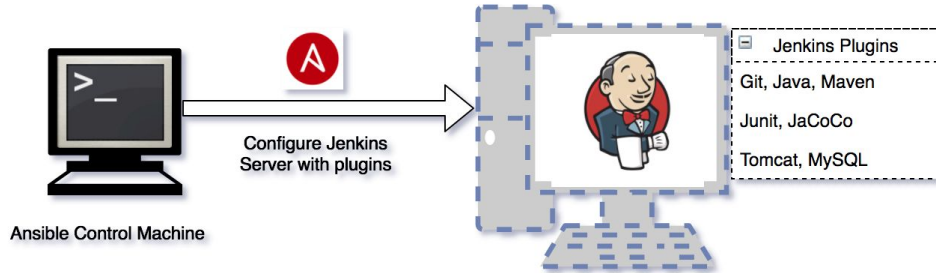
Function: ReadHeader(): 86
bigOh: false messageChain: 1 syncCalls: 0 LineCount: 12

Function: ReadBody(): 100
bigOh: false messageChain: 1 syncCalls: 0 LineCount: 18

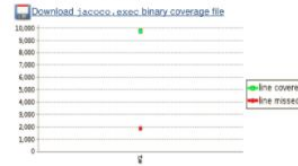
Function: EscapeCode(): 120
bigOh: false messageChain: 7 syncCalls: 0 LineCount: 15
```

Build Log for Code analysis on checkbox.io application

Milestone 2 (Code Coverage Report)



JaCoCo Coverage Report



Jenkins Server Code Coverage

Overall Coverage Summary

name	instruction	branch	complexity	line	method	class
all	66%	42%	47%	84%	87%	93%
classes	M: 24961 C: 48509	M: 4155 C: 3043	M: 3191 C: 2580	M: 1842 C: 9765	M: 307 C: 2132	M: 21 C: 284

Coverage Breakdown by Package

name	instruction	branch	complexity	line	method	class
edu.ncsu.csp.trust	M: 170 C: 692 80%	M: 18 C: 54 75%	M: 22 C: 57 72%	M: 33 C: 154 82%	M: 11 C: 32 74%	M: 0 C: 11 100%
edu.ncsu.csp.trust.action	M: 1410 C: 7944 85%	M: 171 C: 532 76%	M: 191 C: 498 71%	M: 369 C: 1859 82%	M: 46 C: 248 84%	M: 2 C: 58 97%
edu.ncsu.csp.trust.action.base	M: 6 C: 87 94%	M: 0 C: 4 100%	M: 2 C: 7 78%	M: 2 C: 31 91%	M: 2 C: 5 71%	M: 0 C: 2 100%
edu.ncsu.csp.trust.controller	M: 122 C: 63 34%	M: 20 C: 2 9%	M: 21 C: 8 28%	M: 43 C: 23 35%	M: 10 C: 8 44%	M: 1 C: 1 50%

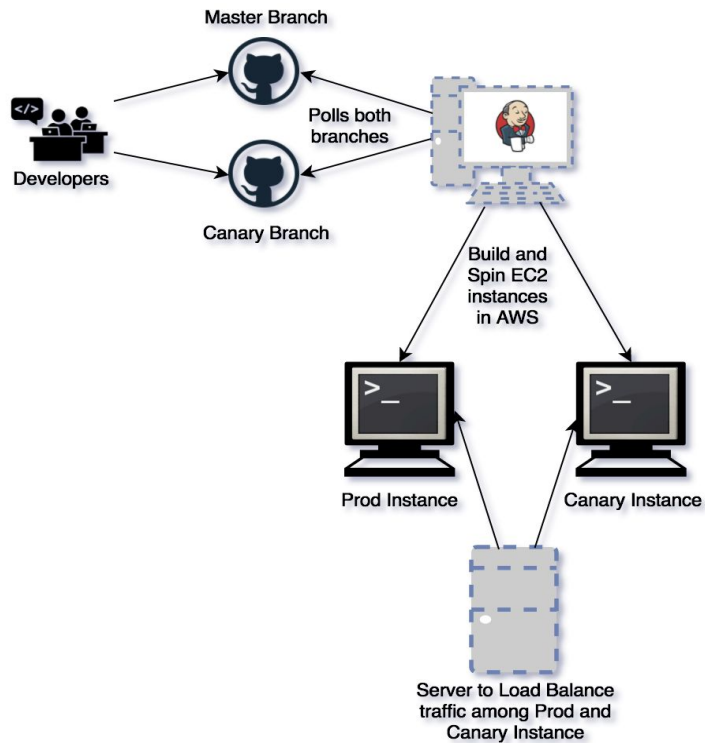
Milestone 3 - Deploy Stage

Deployment

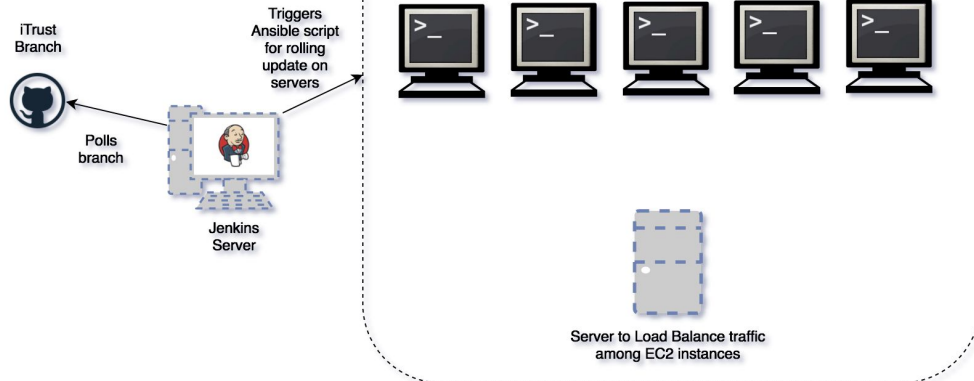
1. Remote deployment to EC2
2. Infrastructure Upgrades
 - a. Nomad Cluster
 - b. Feature Flag
3. Canary Release
4. Rolling Update

Milestone 3

Canary Release



Rolling Update



Special Milestone

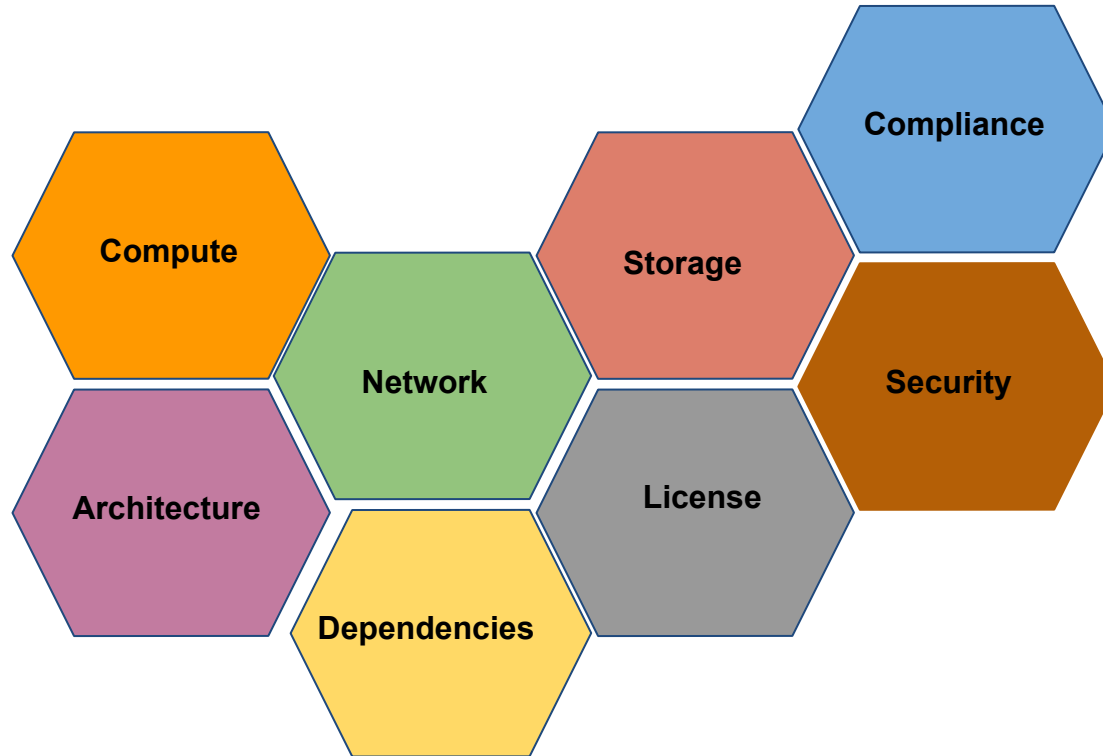
Feasibility of App-Migration to Cloud

Why?

1. Aid customers in tackling the factors that inhibit the migration to cloud.
2. Effective utilisation of cloud resources and services
3. Bang for the buck
4. Choosing the right provider

Analysis on Cloudifying Application

How?



Thank You!! :)